REMARKS

The Official Action of June 17, 2004, and the prior art cited and applied therein have been carefully reviewed. The claims in the application are now claims 1-7, and these claims define patentable subject matter warranting their allowance. Accordingly, the applicants respectfully request favorable reconsideration and allowance.

Acknowledgement by the PTO of the receipt of applicants' papers filed under Section 119 is noted.

Applicants' specification at page 2 refers to two prior Japanese publications. Applicants believe that these are amply and correctly described in applicants' specification. Moreover, one of these has been cited and applied by the examiner, i.e. JP-A-9-316570 in the name of Nakajima et al, assigned to Chuetsu Metal Works. Applicants believe that no IDS is necessary for JP '642, and applicants respectfully rely on 37 CFR 1.104(a)(1) and (c)(2).

Claims 1-5 have been rejected under the second paragraph of §112, the examiner having helpfully pointed out that use of the transitional "consisting of" language makes claim 1 inconsistent with claims 4 and 5.

Accordingly, applicants have amended claim 1 to replace "consisting of" with the open language "comprising". In addition, a new claim 7 has been added above.

The amendment to claim 1 clearly is not a "narrowing" amendment, but is indeed a broadening amendment. No limitations have been added and none are intended.

New claim 7 is an independent claim which retains the closed "consisting of" transition language, but yet is in proper form by including Se and/or B as optional components. Claim 7 is patentable for the same reasons as claim 1-6, as pointed out below.

Withdrawal of the rejection based on the second paragraph of §112 is in order and is respectfully requested.

Claims 1-5 have been rejected as obvious under §103 from Nakashima et al USP 5,582,281 (Nakashima) in view of Nakajima et al JP 9-316570 (JP '570). This rejection is respectfully traversed.

First, applicants respectfully note that the preliminary amendment filed March 22, 2004, contains an error in the listing of claims, as original claim 6 was not re-copied. On the other hand, claim 6 was not canceled either, and was not intended to be canceled, and in the listing of claims presented above claim 6 has been re-presented.

Now, considering the rejection on its merits, applicants understand that the PTO takes the position that Nakashima "discloses the features [of the presently claimed invention] including the claimed copper base alloy composition and hardness", and that a dispersion of Mn-Si and Bi would have been inherently present in Nakashima as evidenced by JP '570. Applicants do not see that the rejection is taking the position that JP '570 teaches any modification of Nakashima.[1]

The text relied upon by the PTO in Nakashima appears at column 2, starting at line 39, which states that the

> sliding member is made of a wear-resistant copper alloy….
>
> (1) A wear-resistant **copper alloy** containing **Zn of 22 to 45 wt %**, at least one metal of 0.1 to 15 wt % which is selected from a metal group of Al, **Mn**, Fe, Pb, Ni, Be, **Si**, Co, Cr, Ti, Nb, V, Zr, Mo, Sn, **Bi**, B etc. and the remainder being Cu and impurities.
>
> (2) The wear-resistant copper alloy has a matrix of α phase = β phase, β phase alone or β phase + γ phase. (emphasis added)

The Rockwell Hardness B value (HRB) is stated to be greater than 80.

The above disclosure relied upon by the PTO is of course a "basket" or "shot gun" disclosure which gives very little guidance to those of ordinary skill in the art. How much more than 80 is the HRB? As regards the metal group of 17

[1] If applicants misunderstand, clarification would be appreciated.

elements, are these to be used individually only, or can mixtures be used? If mixtures, what mixtures? As to the range of 0.1 to 15 wt %, is this to be of the total or of the individual components?

To obtain more guidance, the person of ordinary skill in the art must go to the specific examples which appear in Table 1 at columns 7 and 8 of Nakashima. Looking at these examples, applicants first note that **not a single example** includes any Bi, the latter of which is an essential component according to the present invention. In this regard, applicants' specification, which must be accepted as accurate in the absence of evidence or good reasoning to the contrary, states as follows at page 5, lines 21-26:

> Bi improves the anti-seizure property, conformability and friction characteristics. These effects are not sufficient when an amount of Bi added is less than 4.2 mass %.

It is clear that none of the examples of Nakashima correspond to applicants' claimed alloy, and that what is stated in the rejection as being "inherently possessed" by Nakashima is incorrect.

In this regard, the law on inherency is clear. Please see for example *In re Brink*, 164 USPQ 247, 247:

> Absent a showing [by the PTO] of some reasonable certainty of inherency, the rejection... must fail.

Also see for example *Ex parte Cyba*, 155 USPQ 756, 757; and *In re Oelrich*, 212 USPQ 323, 326. As the specific examples do not inherently provide applicants' alloy, it clearly follows that it is not reasonably certain or inevitable that all of the Nakashima alloys falling within the broad disclosure near the bottom of column 2 of Nakashima will inherently correspond with applicants' alloy. Certainly some do not, and therefore there is no certainty of inherency.

Returning to the examples of Table 1 of Nakashima, the example which comes closest is specimen D which contains 38% Zn (outside applicants' range), 2.3% Mn and 1% Si. But specimen D also contains Al and Pb.

Two comparative examples of Nakashima may also be considered, namely specimens I and K. Of these specimen I contains 21.5 % Zn and 5% Mn, but no Si. In accordance with the present invention, both Mn and Si must be present in order to provide the intermetallic compound Mn-Si. Comparative specimen I also undesirably contains Fe and Al.

Comparative specimen K contains 22 % Zinc, 3% Mn and 1% Si, but undesirably contains 6% Pb. The matrix is α and the HRB is only 55.

And, of course, Nakashima denigrates the comparative examples and thus teaches **away from** the comparative examples.

As regards claims 3-5, again no examples disclose the presence of neither Se nor B, so again there is no question of inherency with respect to claims 3-6 for the additional features set forth in the dependent portions of claims 3-6.

Although JP '570 has not been cited (as understood) for any teaching as to any modification of the composition of Nakashima, applicants must state for the record that JP '570 teaches **away from** the present invention. Therefore, if it were contemplated to apply JP '570 to modify any teaching of Nakashima, following JP '570 would not lead one to the present invention. First in this regard, applicants respectfully rely upon what they state in their specification in the paragraph spanning pages 2 and 3 as follows:

> Furthermore, the second conventional copper base alloy [JP '570] contains the β-phase in the matrix. The wear resistance can be improved since the β-phase is hard. However, when used as a bearing alloy for bearings used under severe conditions such as the floating bush bearing of the turbocharger, the second conventional copper base alloy has a possibility of seizure particularly in the dried-up state. The possibility of seizure has not been overcome yet.

Thus, to follow JP '570, one will not obtain applicants' alloy or applicants' results.

Please note that whereas Nakashima does not teach any particular amount of Bi and contains no Bi in any of the disclosed examples, JP '570 does teach a specific optional

quantity of Bi, namely 0.1-4%. But this quantity lies outside of applicants' claimed range, i.e. in accordance with the present invention, applicants' alloy must contain a minimum of 4.2 mass% as indicated in applicants' specification near the bottom of page 5, quoted above. Applicants' improved results are not achieved, i.e. the desired effects "are not sufficient when an amount of Bi added is less than 4.2 mass %".

Thus, even if it were obvious to somehow modify Nakashima by what is taught by JP '570, applicant's claimed invention would not reached.

To complete the record, applicants wish to respectfully add some addition remarks concerning the rejection based on Nakashima in view of JP '570. Thus, applicants claimed invention is directed to a copper base alloy suitable for use as a material for a sliding member, in which alloy a tenacious eutectic structure of the α--phase and the Mn-Si compound is distributed in the structure of softer α-single phase, whereupon the alloy has high resistances to seizure and wear and high conformability. Please see the TABLE attached hereto.

Nakashima discloses a technique for connecting a sliding member to a synchronizer ring. The sliding member comprises a copper base alloy having a composition and

structure as shown in the TABLE attached hereto. A hot working process is employed for the connection.

Nakashima includes an essential matrix of hard β-phase. In this respect, the claimed invention clearly differs from Nakashima. As is clear from the attached TABLE, the amount of Zn in Nakashima is larger than an amount of Zn in the claimed invention in order that the β-phase may be contained in the matrix.

Nakashima discloses that α-phase alone is less rigid and insufficient in its resistance to wear. In fact, the α-phase is softer than the β-phase. In Nakashima, the hard β-phase is contained in the matrix so that resistance to wear is achieved.

In the claimed invention, however, a tenacious eutectic structure of the α-phase and the Mn-Si compound is distributed in a softer single structure of α-phase. Consequently, the obtained copper base alloy has high resistances to seizure and wear and high conformability.

Furthermore, since the copper base alloy of Nakashima contains hard β-phase, resistance to wear can be improved, but the resistance to seizure would be insufficient when the copper base alloy of Nakashima is used under a severe condition such as a floating bush of a turbocharger.

Nakashima shows comparative examples of alloys of single α-phase in TABLE 1. However, as noted above, each of the shown alloys has a different composition from the copper base alloy of the claimed invention. Accordingly, each of the shown alloys cannot achieve the effects obtained from the claimed invention.

JP '570 discloses a technique for manufacturing an end bearing for a one-way clutch or other sliding parts. See the attached TABLE for the composition and structure of the copper base alloy of JP '570. One of the objects in the cited reference is to improve the resistance to wear. A cold plastic working method is employed in JP '570.

JP '570 defines an amount of β-phase as 30% or less. More specifically, since JP '570 may contain a hard β-phase, the resistance to seizure would be insufficient when the bearing is used under a severe condition such as a floating bush of a turbocharger, although the resistance to wear can be improved.

Furthermore, Bi is not an essential element in JP '570. This reference differs from the claimed invention in this respect. As noted above, Bi may be selectively added to in JP '570, but its amount ranges from 0.1 to 4%. Consequently, high resistance to seizure as achieved by the claimed invention cannot be obtained from JP '570.

Furthermore, JP '570 requires a cold plastic working method to improve the resistance to wear. However, the claimed invention achieves high resistance to wear without such a cold plastic working method. They are inherently different.

The claimed invention provides a copper base alloy in which a tenacious eutectic structure of the α-phase and the Mn-Si compound is distributed in the structure of softer α-single phase, whereupon the claimed alloy has a high resistance to wear. Nakashima and JP '570 do not disclose or suggest, alone or together, the composition and structure of the claimed invention.

Withdraw of the rejection is in order and respectfully requested.

All issues have been discussed and resolved above, whereby allowance of the present application is in order. Such as respectfully requested.

Respectfully submitted,

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TABLE
COMPARISON OF COMPOSITION AND STRUCTURE BETWEEN CLAIMED INVENTION AND CITED REFERENCES

		Cu	Zn	Bi	Mn	Si
Present invention	Claim 1	Remainder	15–25	4.2–10	2–7	1–3
	Claims 4 to 6	Remainder	↑	↑	↑	↑
a:US5582281		Remainder	·22–45 · *	*	*	*
b:JP09316570		Remainder	15–37	Selected element 0.1–4	0.3–5	0.3–3

		Se	B	Pb	Matrix	Distributed phase
Present invention	Claim 1			Not contained	α	Eutectic structure (a and Mn-Si) and Bi
	Claims 4 to 6	0.05–0.3	0.01–0.2	↑	↑	↑
a:US5582281		Not disclosed	*	*	·$\alpha+\beta$ ·β ·$\beta+\gamma$ (·α(Compared example)	Not disclosed
b:JP09316570		Not disclosed	Not disclosed	Selected element 0.1–4	α: Not disclosed $\beta \leqq 30$	Mn_6Si_3

Where *1 denotes 0.1 to 15% in gross (*1 in Zn denotes a case of aluminum bronze material containing 3 to 15% Al as essential element).